

ROLAND SANTA ANA**DESCRIPTION OF THE INVENTION****TITLE: DRAIN TRAP WITH CLEAN OUT****TECHNICAL FIELD**

This invention relates in general to articles in the tube and plumbing industry, in particular to sink (kitchen, bathroom, etc) and bathroom mount drain traps that may be installed inside a wall and that have an aperture and clean out cap with a detachable and flexible screening and cleaning device.

BACKGROUND ART

The prior art has diverse examples of sink, kitchen and bathroom tubes and drains as well as "J" shaped bend ("J bend") tubes and traps, all achieving distinct purposes. Nevertheless, none of the inventions present in the prior art disclose the drain trap with clean out subject of this application.

For example, US Patent No. 262,549 (Worthen, 1882) discloses a trap for water waste detectors, and US Patent No. 598,992 (Hosford, 1898) describes a trap that is vertically and horizontally adjustable and is a balanced pedestal or support for a receptacle used in connection therewith. These devices are different from the present invention for they do not include all the characteristics and novel elements of the same, in particular the aperture that permits cleaning the inside of the tube and the bristle brush for screening the materials and substances that pass through the tube, and for cleaning the inside of said tube. In addition, these inventions are not claimed as being devices that may be installed inside a wall, unlike the drain trap with clean out.

There are traps that have an opening, such as US Patent No. 3,182,679 (Valentino, 1965) for closures for clean-out openings in drain traps and for other purposes and as US Patent No. 4,031,914 (Neri, 1977) for a sink trap with clean out opening. Yet, these patents do not have the advantages of the present invention. In the Neri invention, the J bend portion does not have apertures and a detachable sealing device or cap located at the same place as the one in the present invention. The location and shape of this drain trap with clean out allows drainage of water, or for a person to visually inspect the item(s) clog(ged) therein. Moreover, this novel invention facilitates the recovery of an item fallen into the

trap by opening the sealing device or cap at the drain trap itself. US Patent No. 3,168,104 (Mathis, 1965) concerns a plumbing trap that has a clean out opening but is different from the present invention because it does not include a bristle brush for cleaning the insides of the tube nor for screening the materials and substances that pass through the tube. In addition, the drain trap with clean out may be stud mounted.

US Patent No. 1,217,763 (Hirrich, 1917) discloses a drain pipe cleaner having a removable plug fitted in an opening, a socket and a rod with spirally arranged elements. This prior art invention has different characteristics than the one subject of this application, the latter including a different shape and location of the bristle brush in comparison to the prior art cleaning rod. In addition, the drain trap with clean out's bristle brush is flexible, therefore permits screening of larger substances and yet minute materials pass through it in a way that clogging is less likely than in the cleaning rod present in the prior art.

US Patent No. 4,179,762 (Barnhardt et al, 1979) pertains to a trap and solids removal assembly for drains. This patent differs from the drain trap with clean out invention for the Barnhardt et al patent refers to a U bend assembly and the drain trap with clean out may have different designs, such as an inside wall drain trap or a J shaped drain trap. In addition, the prior art invention includes a U shaped trap having a cylindrical base portion with an aperture and sealing device that enables visual inspection and cleaning. Nevertheless, the location of the sealing device of the Barnhardt et al patent differs from the location of the apertures and sealing or cleaning cap of the drain trap with clean out, being the latter on the drain trap while the Barnhardt et al invention locates it at the cylindrical base portion of the same. In addition, the prior art invention does not function in the same manner as the drain trap with clean out disclosed herein, for the first has restricted water flow as a product of the shape of the trap (which includes a cylindrical base portion, unlike the drain trap with clean out) and may clog up easily (unlike this novel drain trap with clean out). Moreover, the invention of the prior art is aesthetically different to the present invention, being this novel one a more sophisticated design occupying less space where installed inside a wall or as a J shaped embodiment. Finally, being the invention in the prior art a trap with a cylindrical base portion adapted for use with a unitary filtering and sealing device, it is not very reliable for effective cleaning of the trap. A tool such as a snake line would be hampered because although a snake may be flexible, it would not be able to guide itself to the upper sections of the U shaped drain trap. Therefore, in the prior art invention, it would not be possible to effectively clean the trap despite the filtering and sealing device; unlike the drain trap with clean out invention subject of this application.

One embodiment of this new invention is shaped as a J and includes a sealing device that may be a cap with a nylon bristle brush for screening and cleaning the inside cavity of the drain trap and/or tube.

US Patent No. 4,301,554 (Wojcicki, 1981) relates to a drain trap with a J-shaped pipe section and a removable tray for straining material such as food and hair from water flowing through the pipe. The present drain trap with clean out invention differs from the one in the prior art because the latter does not include an element such as the novel nylon bristle brush.

US Patent No. 4,516,278 (Lamond, 1985) refers to a flexible plumbing trap meant to be used with drain pipes from sinks or other fixtures that fits pipes of different diameters, differing from the drain trap with clean out because the Lamond patent does not have an aperture with sealing device or cap that includes a bristle brush for screening materials and substances and for cleaning the inside of the tube.

US Patent No. 5,267,361 (Lai, 1993) concerns a drain trap with an L-shaped inlet tube, a cap, a vertical discharge tube and a garbage-blocking member, the latter member being detachably fitted. This device is different from the drain trap with clean out because unlike the drain trap with clean out, the water flow design of the Lai patent is restricted and because the Lai invention does not clean the inner sidewall of the pipe.

US Patent No. 5,525,215 (Marchionda, 1996) describes a drain trap filter assembly with a T-shaped base portion with a removable filter enabling visual inspection and cleaning, also having a flow through inspection reservoir insert with a filter cap extending downstream. This invention is different from the drain trap with clean out because it does not have the characteristic aperture clean out access, sealing device or cap and bristle brush that the drain trap with clean out has. In addition, the invention in the prior art does not have an attractive, hydrodynamic design, unlike the drain trap with cleanout that may be installed inside or outside a wall.

US Patents Nos. 5,651,147 and 5,509,148 (Steele et al, 1997 and 1996) are for a 3-way trap elbow and cleanout system, including a method for providing a plumbing configuration for unclogging a connecting line between a trap and a sewer line should the connection become clogged. These inventions are different from the drain trap with clean out invention for said prior art patents do not include a nylon bristle brush for screening the contents (objects, materials and substances) that pass through the tube; and for cleaning the insides of the tube. Moreover, the prior art inventions differ from the drain trap with clean out because the latter can be installed inside a wall.

US Patent No. 5,360,031 (Trueb et al, 1994) for a P-trap insulation and article; and US Patent No. 3,470,900 (Rothausser, 1969) pertain to a trap that is distinct from the present invention. These prior art patents differ from the drain trap with clean out because they do not include an element such as the bristle brush for screening the objects, materials and substances that enter and pass through the tubes, and that may also be used for cleaning the tube.

US Patent No. 4,032,455 (Kale, 1977) for traps for sinks, laundry tubs and the like and US Patent No. 3,967,324 (Olive, 1976) for a flexible trap for a waste line assembly differ from the drain trap with clean out because they do not have a similar bristle brush. The referred bristle brush of the drain trap with clean out claimed herein under is flexible, therefore letting some materials pass, and thus being less likely to clog a tube, sink or garbage disposal than the inventions of the prior art.

With respect to US Patent No. 5,715,550 (Griffin, 1998) for a trap door, this prior art invention is quite different from the apertures and sealing device or cap and bristle brush disclosed for the drain trap with clean out, the latter permitting screening of objects, materials and substances that enter and pass by the tube, and cleaning of said tube.

In relation to US Patent No. 4,555,820 (Dragstrem, 1985) for a drain pipe system and US Patent Application Publication No. 2002/0116759 A1 (Mantyla et al) for a P-trap for plumbing drainage systems, these inventions do not have a sealing device or cap with a bristle brush that resembles in any way the one claimed for the drain trap with clean out.

DISCLOSURE OF THE INVENTION

The present invention embodies a drain trap with clean out that may be installed outside or inside a wall and that may be stud mounted. The main elements of this invention are:

- (a) A drain trap unit (2 or 2a, as per the different embodiments disclosed in the drawings) having three apertures, which may be tube connectors.
- (b) One of said apertures (3a or 3d, as per the different embodiments disclosed in the drawings) permitting installation of a tube or fixture, such as but not limited to a sink or tub tube.
- (c) A second aperture (3b or 3e, as per the different embodiments disclosed in the drawings) being a clean out access and permitting installation of a sealing device.
- (d) A sealing device such as not limited to a cap (4a or 4, as per the different embodiments disclosed in the drawings) attached to a flexible device for screening and/or

cleaning the trap and/or tube, wherein the sealing device is used to seal or cover the tube. When the sealing device is opened, user may have access to the inside of the trap and/or tube.

(e) A flexible device (5 or 5a, as per the different embodiments disclosed in the drawings) for screening and/or cleaning the contents inside the tube or drain trap, which may include but is not limited to a flexible bristle brush.

(f) A third aperture (3c or 3f, as per the different embodiments disclosed in the drawings) permitting the installation of a tube to the waste line or drain pipes.

Additional elements may be included for the different embodiments of this invention, for it may be installed inside or outside a wall at user's preference. These elements are specified hereinunder and in the claims.

OBJECTS AND ADVANTAGES OF THE INVENTION

The present invention constitutes a significant improvement in several aspects over such previously identified efforts of the prior art as described below.

An object of the present invention is to provide a drain trap with clean out that may be part of a J shaped embodiment or may be part of the inside wall embodiment hereinafter described. In addition, this invention may be stud mounted.

The embodiment of this invention installed inside a wall has a valuable advantage for disabled people that may be in wheelchairs. These disabled people may have experienced that when using a sink, their legs or knees may touch the sink tubes that hang low, therefore experiencing the very hot or cold temperatures of the water that drains through them. The inside wall stud mount embodiment benefits disabled people for they will be comfortable using a sink, no longer having their legs or knees bumping into the tubes or trap. Furthermore, they will not have to feel the hot or cold temperatures from the tubes because they will no longer have physical contact with them.

Another object of this invention is that it effectively drains out water and clogs sink waste, including objects, materials and substances inside the drain trap.

In addition, this invention also enables user to view the clogged object(s), materials or substances, therefore being able to remove them easily, and in particular, to recover an item dropped into the sink.

A further object is to screen all objects, materials and substances that enter and pass through the tube and drain trap.

Another advantage of the drain trap with clean out is that its bristle brush screening (5 or 5a, as per the different embodiments disclosed in the drawings) is flexible, therefore letting some of the minute materials pass through the drain trap and tube, therefore not clogging them as other inventions in the prior art do. Therefore, this drain trap with clean out is a novel invention with increased utility for sinks in bathrooms, toilets, bathtubs or showers, kitchens, garbage disposals, laboratory sinks, restaurant sinks, amongst others.

Still another object of the present invention is to enable user to clean the tube and drain trap with the bristle brush screen (5 or 5a, as per the different embodiments disclosed in the drawings).

Another object of this invention is to provide an inside wall drain trap with clean out that will make a sink aesthetically more attractive for viewer.

Finally, the drain trap with clean out has the advantage of saving space where it is installed.

BRIEF DESCRIPTION OF DRAWINGS

The present application includes four drawings. The scope of the drain trap with clean out is however limited only by the scope of the claims, not by a particular embodiment shown in the drawings.

FIG.1 is a side view of the embodiment of a stud mount drain trap with clean out. This embodiment may be installed inside or outside a wall. This embodiment has a detachable wall cover plate (1) to be used when the invention is to be installed inside a wall. The wall cover plate (1) may be secured to the drain trap unit (2) with a screw (8a) inserted and secured to the screw mount (8b). The drain trap unit (2) has three apertures (3a, 3b and 3c). Aperture 3a permits the installation of a tube or fixtures coming from a sink, tub, apparatus, amongst others. Aperture 3b is used as a clean out access, and will permit the installation of a sealing device (4a). Aperture 3c connects the drain trap unit (2) to the main waste pipe. The detachable wall cover plate (1) has two apertures that match two apertures of the drain trap unit (3a and 3b); and a small aperture that will permit a screw (8a) to fasten the detachable wall cover plate (1) to the screw mount (8b) of the drain trap unit (2).

This embodiment also includes a slip joint sealant or connector (4b) to secure the pipe to the drain trap unit (2). In addition, this drawing depicts the detachable sealing device or cap (4a) with the bristle brush (5) used for screening and/or cleaning the interior cavity of the drain trap unit (2) and/or tube. When the sealing device (4a) is opened and removed, user may have access to the inside of the drain trap unit (2). Finally this

embodiment may be stud mounted to a wall by securing its detachable stud mount arms (7) to a wall.

FIG. 2 is a front view of the embodiment depicted in FIG. 1. This drawing includes the drain trap unit (2), three apertures (3a, 3b and 3c) and the screw mount (8b). In addition it illustrates the partition device (6) inside the drain trap unit (2) and the detachable stud mount arms (7). Aperture 3a permits the installation of a tube or fixtures coming from a sink, tub, apparatus, amongst others. Aperture 3b is used as a clean out access. Aperture 3c connects the drain trap unit (2) to the main waste pipe.

FIG. 3 is a front view of the embodiment depicted in FIG.1, but with an inner view of the drain trap (2) displaying the partition device (6) in further detail. This drawing includes the drain trap unit (2), three apertures (3a, 3b and 3c), the screw mount (8b), partition device (6) inside the drain trap unit (2) and the detachable stud mount arms (7). Aperture 3a permits the installation of a tube or fixtures coming from a sink, tub, apparatus, amongst others. Aperture 3b is used as a clean out access. Aperture 3c connects the drain trap unit (2) to the main waste pipe.

FIG. 4 is a side view of the J shaped drain trap with clean out embodiment. This drawing includes the J shaped drain trap unit (2a) and three apertures (3d, 3e and 3f). Aperture 3d permits the installation of a tube or fixtures coming from a sink, tub, apparatus, amongst others. Aperture 3e is used as a clean out access. Aperture 3f connects the drain trap unit (2a) to the main waste pipe. In addition, this drawing includes the sealing device or cap (4) and the device or bristle brush (5a) for screening and/or cleaning the insides of the tube and/or drain trap (2a).

DESCRIPTION OF PREFERRED EMBODIMENT/ BEST MODE

The preferred embodiment of the present invention is an inside wall stud mount drain trap with clean out. The elements of the preferred embodiment of this invention are:

- (a) A detachable wall cover plate (1) made of metal, plastic or any man made material(s). This detachable wall cover plate (1) may be attached to the drain trap unit (2) by securing it with a screw (8a) to a screw mount (8b) on the drain trap unit (2).
- (b) A drain trap unit (2) made of metal or any man made material(s), having three apertures or tube connectors.
- (c) One of said apertures (3a) permitting installation of a tube, fixture or drain pipe, such as but not limited to a sink tube.

(d) A second aperture (3b) being a clean out access and permitting the installation of a sealing device (4a).

(e) A sealing device such as not limited to a cap (4a) made of metal or any man made materials, attached to a detachable flexible device (5) for screening and/or cleaning the trap and/or tube, wherein the sealing device (4a) is used to seal or cover the tube with a gasket. When the sealing device (4a) is opened and the sealing device (4a) and screening and/or cleaning device (5) are removed, user may have access to the inside cavity of the drain trap unit (2) and/or tube.

(f) Flexible device (5) for screening and/or cleaning the tube or drain trap unit (2), such device being a flexible nylon bristle brush comprising a rod made of plastic attached to natural hairs or man made materials. The screening and/or cleaning device (5) may be screwed to the sealing device (4a).

(g) A third aperture (3c) connecting the drain trap (2) to the main waste pipe.

(h) A partition element (6) inside the drain trap unit (2) and inside the wall, made of materials such as but not limited to metal or any man made materials, preventing leakage of sewer gas from passing through the waste line inside the drain trap.

(i) A slip joint sealant or connector (4b) to secure the pipe to the drain trap unit (2).

(j) Two detachable stud mount arms (7) that will enable the drain trap unit (2) to be secured to a wall.

(k) A screw (8a) that by being screwed into the screw mount (8b) will secure the wall cover plate (1) to the drain trap unit (2).

(l) A screw mount (8b).

DESCRIPTION OF ALTERNATE EMBODIMENTS

The drain trap with clean out claimed herein under may have the following embodiments. The invention may be stud mounted to a wall and may be installed outside a wall. For purposes of using the invention for installation outside of a wall, user can use the preferred embodiment described herein above and not use the wall cover plate (1) and screw (8a) and detachable screw mount (8b) elements because they are no longer necessary. In addition, the drain trap unit may have different designs, such as but not limited to a J shape (2a).

The first alternate embodiment of this invention is a stud mount drain trap with clean out to be installed outside a wall. The elements of this invention are:

(a) A drain trap unit (2) made of materials such as but not limited to metal, plastic, polyvinylchloride (PVC), or any man made materials, having three apertures or tube connectors.

(b) One of said apertures (3a) permitting installation of a tube, fixture or drain pipe, such as but not limited to a sink tube.

(c) A second aperture (3b) permitting installation of a sealing device (4a).

(d) A sealing device such as not limited to a cap (4a) made of materials such as but not limited to metal, plastic, polyvinylchloride (PVC), or any man made materials, attached to a detachable flexible device (5) for screening and/or cleaning the trap and/or tube, wherein the sealing device (4a) is used to seal or cover the tube with a gasket. When the sealing device (4a) is opened and the sealing device (4a) and screening and/or cleaning device (5) are removed, user may have access to the inside of the drain trap unit (2) and/or tube.

(e) Flexible device (5) for screening and/or cleaning the tube or trap, such device being a flexible nylon bristle brush comprising a rod made of plastic, rubber, byproducts, or any man made materials attached to natural hairs or man made materials. The screening and/or cleaning device (5) may be screwed to the sealing device (4a).

(f) A third aperture (3c) connecting the drain trap (2) to the main waste pipe.

(g) A partition element (6) inside drain trap unit (2) but outside the wall made of materials such as but not limited to metal, plastic, polyvinylchloride (PVC), or any man made materials, preventing leakage of sewer gas from passing through the waste line inside the drain trap unit (2).

(h) A slip joint sealant or connector (4b) to secure the pipe to the drain trap (2).

(i) Two detachable stud mount arms (7) that will enable the drain trap unit (2) to be secured to a wall.

(j) A screw mount (8b). This element will be optional, depending if user used the preferred embodiment described herein above and installed outside a wall. This element may also be suppressed from this alternate embodiment.

A second alternate embodiment of this invention to be installed outside of a wall has the following elements:

(a) A drain trap (2a) shaped as a "J" made of materials such as but not limited to metal, plastic, polyvinylchloride (PVC), or any man made materials, having three apertures or tube connectors (3d, 3e, 3f).

(b) One of said apertures (3d) permitting installation of a tube, such as but not limited to a sink tube or fixture.

(c) A second aperture (3e) being a clean out access, permitting installation of a sealing device (4).

(d) A sealing device (4) such as not limited to a cap made of materials such as but not limited to metal, plastic, polyvinylchloride (PVC), or any man made materials, attached to a detachable flexible device (5a) for screening and/or cleaning the drain trap unit (2a) and/or tube, wherein the sealing device (4) is used to seal or cover the tube or drain trap unit (2a) with a gasket. When the sealing device (4) is opened, user may have access to the inside cavity of the drain trap unit (2a) and/or tube.

(e) Flexible device (5) for screening and/or cleaning the contents inside the tube or J shaped drain trap (2a), which may include but is not limited to a flexible bristle brush comprised of a rod made of plastic, rubber, byproducts, or any man made materials. This rod is attached to natural hairs, byproducts or any man made materials.

(f) A third aperture (3f) connecting the drain trap (2a) to the main waste pipe. It permits the installation of a tube to the waste line or drain pipes.

The invention is not however limited to the above embodiments and materials, for they are given as examples only. The scope of the invention should be determined by its claims not by a particular embodiment of the invention.